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Jameco Part Number 218270

Technical Data Sheet
Infrared Remote-control Receiver Module

IRM-2038S10

Features :

- High protection ability against EMI .
- Circular lens to improve the receive characteristic.
- Line-up for various center carrier frequencies.
- Low voltage and low power consumption.
- High immunity against ambient light.
- Photodiode with integrated circuit.
- TTL and CMOS compatibility.
- Long reception distance.
- High sensitivity.

Description :

- The device is a miniature type infrared remote control system receiver which has been developed and designed by utilizing the most updated IC technology. The PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as an IR filter. The demodulated output signal can directly be decoded by a microprocessor.

Applications :

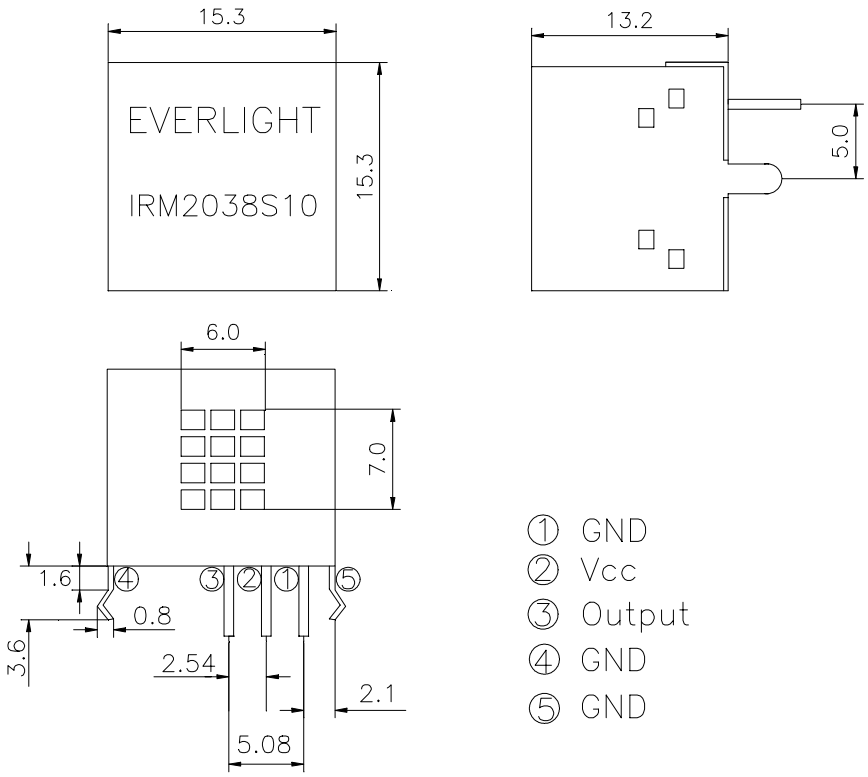
1. Optical switch
2. Light detecting portion of remote control

- AV instruments such as Audio, TV, VCR, CD, MD, etc.
- Home appliances such as Air-conditioner, Fan , etc.
- The other equipments with wireless remote control.
- CATV set top boxes
- Multi-media Equipment

PART	MATERIAL	COLOR
Chip	Silicon	Black
Shell	Tinplate	Silver-white

Device NO: DMO-020-156

■ Package Dimensions :



■ NOTES :

1. All dimensions are in millimeters.
2. In case of designation is tolerance ± 0.3mm.

■Absolute Maximum Ratings at TA = 25℃

Parameter	Symbol	Rating	Unit	Notice
Supply Voltage	Vcc	0~6	V	
Operating Temperature	Topr	-25 ~ +80	℃	
Storage Temperature	Tstg	-40 ~ +85	℃	
Soldering Temperature	Tsol	260	℃	4mm from mold body less than 5 seconds

■Electronic Optical Characteristics :

TA = 25℃

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Supply Voltage	Vcc	4.5	5	5.5	V	DC voltage
Supply Current	Icc	---	---	3	mA	No signal input
B.P.F Center Frequency	Fo	---	38	---	KHz	
Peak Wavelength	λ_p	---	940	---	nm	
Reception Distance	L_0	7	---	---	m	At the ray axis *1
	L_{45}	4	---	---		
Half Angle(Horizontal)	Θ_h	---	45	---	deg	
Half Angle(Vertical)	Θ_v	---	45	---	deg	
High Level Pulse Width	T_H	400	---	800	μs	At the ray axis *2
Low Level Pulse Width	T_L	400	---	800	μs	
High Level Output Voltage	V_H	4.5	---	---	V	
Low Level Output Voltage	V_L	---	0.2	0.5	V	

■ Appendix of Page 3 :

*1:The ray receiving surface at a vertex and relation to the ray axis in the range of θ= 0° and θ=45°.

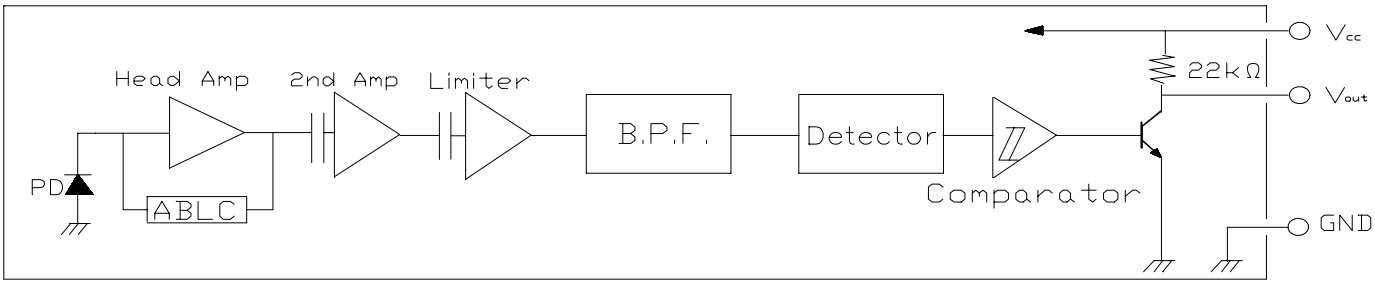
*2:A range from 30cm to the arrival distance. Average value of 50 pulses.

■ Test Method：

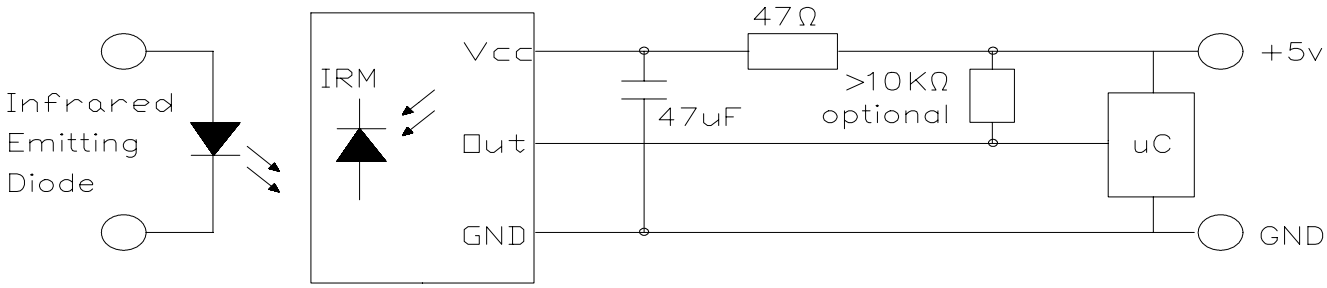
The specified electro-optical characteristics is satisfied under the following Conditions at the controllable distance.

①Measurement place
A place that is nothing of extreme light reflected in the room.
②External light
Project the light of ordinary white fluorescent lamps which are not high Frequency lamps and must be less then 10 Lux at the module surface. (Ee≦10Lux)
③Standard transmitter
A transmitter whose output is so adjusted as to **Vo=400mVp-p** and the output Wave form shown in Fig.-1.According to the measurement method shown in Fig.-2 the standard transmitter is specified.
However , the infrared photodiode to be used for the transmitter should be λp=940nm,Δλ=50nm. Also, photodiode is used of PD438B(Vr=5V).
(Standard light / Light source temperature 2856°K).
④Measuring system
According to the measuring system shown in Fig.-3

■ Block Diagram：

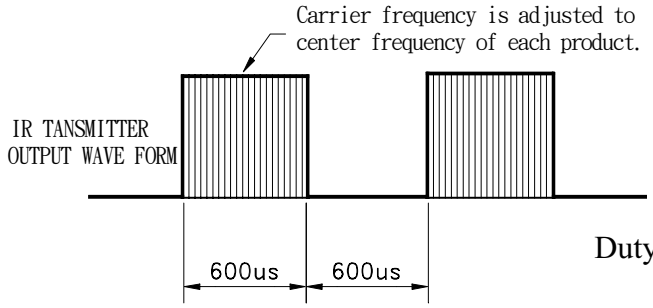


■ Application Circuit：

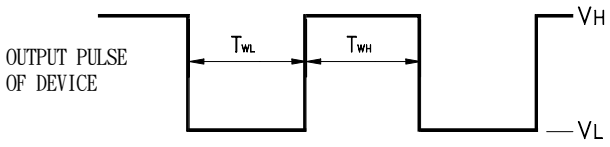


RC Filter should be connected closely between Vcc pin and GND pin.

Fig.-1 Transmitter Wave Form



D.U.T output Pulse



Duty=0.5

Fig.-2 Measuring Method

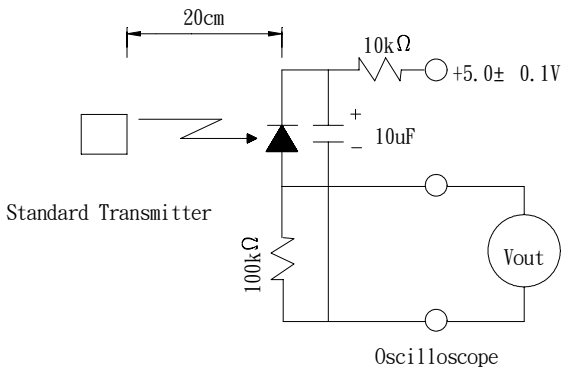
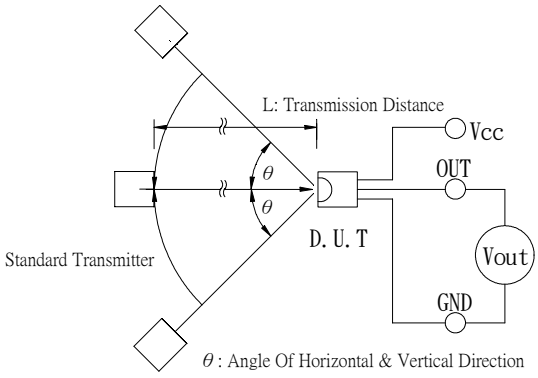


Fig.-3 Measuring System



Device NO: DMO-020-156

■ TYPICAL ELECTRICAL/OPTICAL/CHARACTERISTICS CURVES

Fig.-4 Relative Spectral Sensitivity vs. Wavelength

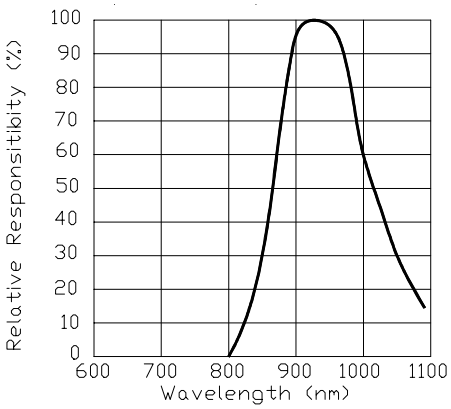


Fig.-5 Relative Transmission Distance vs. Direction

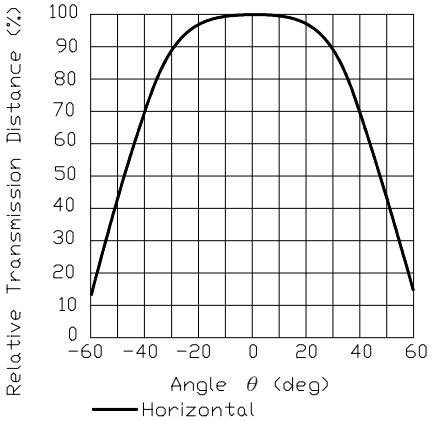


Fig.-6 Output Pulse Length vs. Arrival Distance

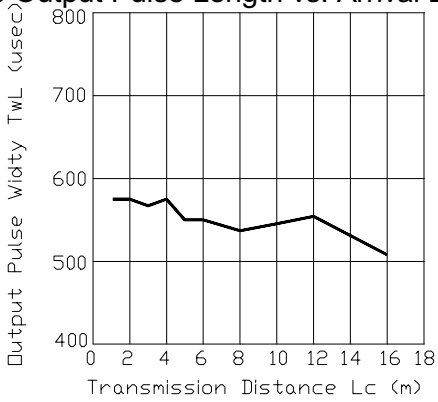


Fig.-7 Arrival Distance vs. Supply Voltage

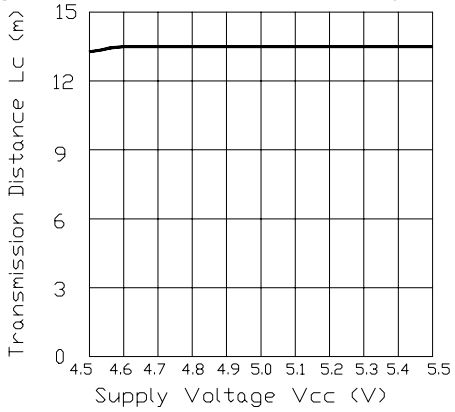


Fig.-8 Relative Transmission Distance vs. Center Carrier Frequency

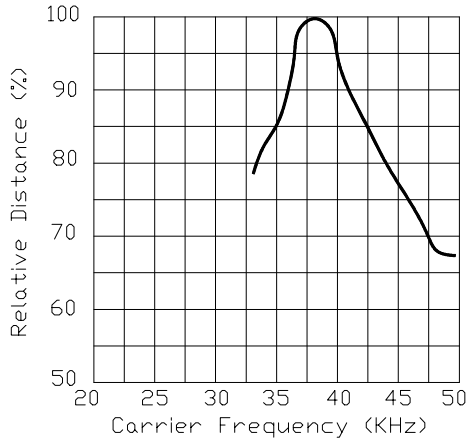
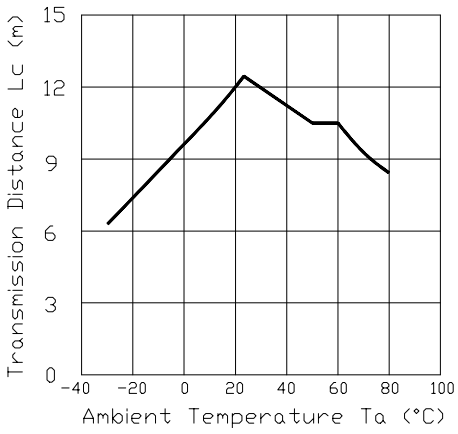


Fig.-9 Arrival Distance vs. Ambient Temperature



IRM-2038S10

Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level: 90%
LTPD: 10%

Test Items	Test Conditions	Failure Judgement Criteria	Samples(n) Defective(c)
Temperature cycle	1 cycle -40℃ +25℃ +85℃ (30min)(5min)(30min) 300 cycle test	$L_0 \leqq L \times 0.8$ $L_{45} \leqq L \times 0.8$ L: Lower specification limit	n=22,c=0
High temperature test	Temp: +85℃ Vcc:6V 1000hrs		n=22,c=0
Low temperature storage	Temp: -40℃ 1000hrs		n=22,c=0
High temperature High humidity	Ta: 60℃,RH:90% Vcc:6V 1000hrs		n=22,c=0
Solder heat	Temp: 260± 5℃ 10sec 4mm From the bottom of the package.		n=22,c=0

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